

**Amendments to the Claims:**

Please amend the claims, such that the pending claims read in accordance with the following listing of claims:

1. (Currently amended) A method of pre-equalizing a transmission characteristic of a signal processing circuitry, said method comprising ~~the steps of:~~

- a) obtaining a difference between an output signal of said signal processing circuitry and an input signal of a pre-equalizing function;
- b) approximating a gradient of said difference based on said obtained difference and an approximation of said transmission characteristic; and
- c) updating control values of said pre-equalizing function ~~(15)~~ based on said approximated gradient.

2. (Original) A method according to claim 1, wherein said approximating step comprises the step of calculating an approximation of a least mean square gradient vector of said difference.

3. (Original) A method according to claim 2, wherein said gradient vector is calculated from a partial differential equation of a system cost function.

4. (Previously amended) A method according to claim 1, wherein said difference is obtained by comparing signal envelopes of said output and input signals.

5. (Original) A method according to claim 4, wherein said input signal is a digital signal and said output signal is an analog signal.

6. (Previously amended) A method according to claim 1, wherein said control values are coefficients of an adaptive digital filter.

7. (Previously amended) A method according to claim 1, wherein said transmission characteristic is approximated as a delay function.

8. (Original) A method according to claim 7, wherein the delay of said delay function corresponds to the position of the maximum analog filter peak of said transmission characteristic.

9. (Original) A method according to claim 8, wherein said gradient vector is calculated using the following equation:

$$\nabla\{E\} = -2e[k] \cdot \underline{d}[k - \tau],$$

wherein

$\nabla\{E\}$  denotes said gradient vector,

$e[k]$  denotes said obtained difference, and

$\underline{d}[k - \tau]$  denotes a vector representation of said input signal assessed by said delay approximation of said transmission characteristic.

10. (Original) A method according to claim 9, wherein filter coefficients are updated in said updating step based on the following equation:

$$\underline{w}[k + 1] = \underline{w}[k] + \mu e[k] \cdot \underline{d}[k - \tau],$$

wherein

$\underline{w}[k + 1]$  denotes a vector representation of updated filter coefficients,

$w[k]$  denotes a vector representation of current filter coefficients, and

$\mu$  denotes a predetermined proportionality factor.

11. (Currently amended) An apparatus for pre-equalizing a transmission characteristic of a signal processing circuitry, said apparatus comprising:

a) ~~a comparing means~~ a comparison circuit for obtaining a difference between an output signal of said signal processing circuitry and an input signal of a pre-equalizer pre-equalizing means;

b) ~~an approximation circuit means~~ an approximation circuit for approximating a gradient of said difference based on said obtained difference and an approximation of said transmission characteristic; and

c) ~~an updating circuit means~~ an updating circuit for obtaining control values supplied to said pre-equalizer pre-equalizing means, based on said approximated gradient.

12. (Currently amended) An apparatus according to claim 11, wherein said ~~comparing means are~~ comparison circuit is arranged to compare said input and output signals based on their envelopes.

13. (Currently amended) An apparatus according to claim 11, wherein said approximation circuit means is arranged to approximate said transmission characteristic as a delay function and to approximate said gradient by using a least mean square approximation function.

14. (Previously amended) An apparatus according to claim 11, wherein said signal processing circuitry is a direct conversion or heterodyne transmitter architecture.

15. (Currently amended) An apparatus according to claim 11, wherein said apparatus comprises a digital pre-equalizer means.

16. (New) An apparatus for pre-equalizing a transmission characteristic of a signal processing circuitry, said apparatus comprising:

- a) comparing means for obtaining a difference between an output signal of said signal processing circuitry and an input signal of a pre-equalizing means;
- b) approximating means for approximating a gradient of said difference based on said obtained difference and an approximation of said transmission characteristic; and
- c) updating means for obtaining control values supplied to said pre-equalizing means, based on said approximated gradient.